obtained: so that the final determination rests on 145 observations of Polaris made from 1885 January 21 to 1886 July 6. These intervals were used till 1887 March 3, since which time another determination, from 78 observations of Polaris, from 1886 July 7 to 1887 April 27, has been used.

Sixty-five observed north polar distances of Polaris above the pole, deduced from observations made in 1886, with observed nadir point and assumed colatitude 37° 47′ 8″ 4, and corrected for flexure and errors of division, give a north polar distance less than that given in the *Berliner Jahrbuch* by 0″·557: 68 observations below the pole, treated in the same way, give a polar distance greater than the Berlin one by precisely the same quantity. Thus our polar distance of Polaris for 1886 is exactly equal to the Berlin one, and the correction of assumed colatitude is + 0″·557; results very similar to those of previous years.

The observations of Polaris above the pole, direct and reflected, made by Miss Walker on 1886, April 8, May 3, 4, and 6, when corrected for errors of division and for refraction, give for the colatitude 37° 47′ 8″·853. The mean for eight years, given in the last Report, is 37° 47′ 8″·854.

579 observations of clock stars made by Mr. Graham in 1886, Mr. Todd in nearly every case reading the circle, give, as a mean value for reduction to the Berlin N.P.D. + 0″·353; or, if we take the means for each separate night as of equal weight, + 0″·319. These have not been corrected for errors of division and flexure, which, for the limits of the zone, 60°-65° N.P.D., have probably a mean value of - 0″·26 or thereabouts; this would have to be applied with an opposite sign to the above means: but the results for intervals of 1° show that the errors of division ought to be determined for each star, as they have been for Polaris and for the nadir point.

Meteorological Observations.—The meteorological observations continue to be communicated daily by telegraph to the Meteorological Office.

The sunshine recorder has been regularly employed, and the records are sent at intervals to the Office.

NOTES.

In the distribution of Jubilee honours the claims of science have not been forgotten. Among those who have been raised to the peerage we are glad to see the name of Sir William Armstrong, C.B., F.R.S. The honour of knighthood has been conferred upon Warington Smyth, Esq., F.R.S.; Dr. Garrod, F.R.S.; G. H. Macleod, Esq., Queen's Surgeon, Edinburgh; and J. Wright, Esq., C.B., late Civil Engineer to the Navy. Among the new Knights Commanders of the Bath are John Simon, Esq., M.D., C.B., F.R.S., late Medical Officer, Privy Council Office; and Capt. Douglas Galton, C.B., F.R.S.; Prof. W. H. Flower, F.R.S., British Museum, and Prof. Brown, Agricultural Department of the Privy Council, have been made Companions of the Bath.

The names of the following gentlemen have been added to the list of the Tyndall Dinner Committee:—The Duke of Northumberland, President of the Royal Institution; Sir W. G. Armstrong, F.R.S., ex-President of the Society of Mechanical Engineers; Dr. Haughton, F.R.S., President of the Royal Irish Academy; E. H. Carbutt, Esq., President of the Society of Mechanical Engineers; and G. B. Bruce, President of the Institution of Civil Engineers.

Mr. Harford J. Mackinder, M.A., has been elected Reader in Geography at the University of Oxford.

In the Report on the Oxford Observatory, which we print to-day, reference is made to important improvements effected, either wholly or in part, at the cost of Dr. De la Rue. We may add to what is there stated that Dr. De la Rue generously offers £500 to convert the Oxford 12¼-inch refractor into a Henry photographic telescope—practically, to buy a new object-glass.

The annual general meeting of the Marine Biological Association will be held to-morrow in the rooms of the Linnean Society. The Laboratory on the Citadel Hill, Plymouth, erected by the Association at a cost of £9000, will be opened for work in the summer, and the Council are anxious to co-operate in the foundation and management of laboratories on other parts of the British coast.

Miss Oldfield has presented to the Herbarium of the Royal Gardens, Kew, the botanical collections made in Australia by her late brother, Mr. Augustus Oldfield. This gentleman was, as stated by Mr. Bentham in the preface to "The Flora of Australia," an acute observer as well as "an intelligent collector." His series of *Eucalypti* are especially good, as he took great pains to obtain the various forms of foliage characteristic of each species, as well as the fruiting and flowering stages. Sir Joseph Hooker used his Tasmanian plants in his "Flora" of that colony. Mr. Oldfield "made large additions to the West Australian plants previously known." These collections were placed at Mr. Bentham's disposal for the purposes of his "Flora Australiensis."

The biennial Exhibition of Agriculture and Entomology in Paris will take place from August 27 next to September 29, at the Orangerie, one of the terraces of the Tuileries Gardens. The French Minister of Public Works is the President of the Society which organizes the display.

The Pilot Chart of the North Atlantic Ocean for June, issued by the Hydrographic Department of Washington, states that Capt. Lassan, of the Norwegian barque *Petty*, while in lat. 17° 38′ N., long. 46° 34′ W., on April 1, experienced three distinct shocks of earthquake, diminishing in force, and accompanied by strong eruption of air-bubbles, covering the surface during the continuance of the shocks. The ice-reports show large numbers of bergs north of lat. 42°, and between long. 47° and 53°.

On June 1, M. Hervé Mangon, President of the Council of the French Central Meteorological Office, read the ninth Annual Report of the work of the Office (see Nature, vol. xviii. p. 96). It shows satisfactory evidence of continued energy and progress in all departments of the service. No less than 154 telegraphic reports are received daily from Europe and Algeria, and 41 telegraphic summaries and weather forecasts are issued, including one to a London daily paper. The success claimed for the forecasts is 88 per cent., and for the warnings of storms 82 per cent., being a greater success than in any previous year. There are 153 climatological stations (including 12 observatories) taking not less than 3 observations daily, in addition to a large number of minor stations. The Office is also actively engaged in collecting observations made at sea, and received upwards of 500 log-books during the past year. This branch is encouraged by the presentation of medals, awarded by the Association Scientifique to the best observers. M. Hervé Mangon reviewed the work of the various observatories, and referred especially to the investigations of M. Renou, at St. Maur, who has just completed an inquiry into the rainfall for the last 200 years, and is finishing a work on the climate of Paris, on which he has been engaged for 40 years. Reference is also made to the reports now received daily from America and the Atlantic, of which our own Meteorological Office bears half the cost. The telegrams are regularly published in the French *Bulletin International*. The other half of the expense of these telegrams is borne by a lady whose name is not generally known. M. Hervé Mangon spoke at great length of the damage caused yearly by the inundations and mountain torrents, and of the advantage of planting the mountain declivities with trees or shrubs. One of the chief features of the past year is the completion of the Observatory of the Pic de l'Aigoual, in the department of Gard, which has been established in the interest of forest meteorology. A series of experiments is to be made on the influence of various kinds of soil and vegetation in storing the water caused by rainfall, and on the time necessary for its evaporation and percolation.

The *Bollettino Mensuale* of the Italian Meteorological Society for May contains the report of the first annual meeting of the Council, held on April 14. The principal matters discussed were: the co-operation of the Italian Navigation Societies; the development of the service of medical meteorology at Naples and other towns; and the preparation of a map of the globe showing all the stations of the Society both at home and abroad. It was proposed to encourage observations of the temperature of the surface of the ground, and to publish the results of these and other observations already collected. The second annual meeting of the Council was fixed for the autumn.

The Observatory at Batavia has just published vol. vii. of its series, containing the magnetic observations (only), from September 1883 to December 1885, together with the results from July 1882 to December 1885, prepared under the direction of Dr. van der Stok. The observations show a well-defined decrease of the declination in 1884–85, at the rate of nearly two minutes a year, and a decrease of the horizontal force at the rate of 0·00012 a year. The vertical force has continued to increase, and the dip shows a progressive value of about 7′·5 a year. It is intended in future to issue, yearly, a volume containing both the magnetic and the meteorological observations, but the publication of the meteorological observations for the years 1883–85, and the discussion of the results for the twenty years during which the observations have been made, are indefinitely delayed, owing to pressure of other work.

Mr. Clement L. Wragge, the newly-appointed Government Meteorologist of Queensland (see Nature, vol. xxxv. p. 229), has published the meteorological synopsis of the Brisbane Observatory and rainfall reports for the colony for January to March 1887, and also his report of the inspection of the stations. The inspection disclosed the thorough disorganization of many of the stations. For instance, at Cooktown, a station of the first class, the spirit thermometer had the enormous error of 15°, owing to the volatilization of the alcohol. At Normanton, another first-class station, the shade thermometers were "exposed" in the sitting-room. It is unnecessary to multiply instances, and we merely quote Mr. Wragge's concluding remark that "the majority of the meteorological records and results already published are unreliable and valueless." We hope with him that the new system will gradually attain a position of excellence equalling that which obtains in this country.

We have received a copy of the lecture delivered lately by Dr. Orme Masson, the Professor of Chemistry in the University of Melbourne, on the first occasion on which he addressed himself publicly to a Melbourne University audience. The subject is, "The Scope and Aims of Chemical Science, and its Place in the University." Dr. Masson has a clear, fresh, and vigorous style, and in this lecture he brings out with much force the part which chemistry has played in modern material progress, and its fitness to serve as an instrument of intellectual culture. He expresses a hope that there may always be at the University of Melbourne a small band of students devoting the bulk of their time for a few years to chemical research. The University, he says, will soon have "well-equipped laboratories, not only for the practical instruction of large classes of medical students and others, but for the accommodation of those specialists who go further in the work, requiring to be provided with the more elaborate paraphernalia of experimental science."

At the opening meeting, on April 19, of the Royal Society of Tasmania for the session of 1887, Mr. R. M. Johnston read an interesting paper on the question, "How far can the general death-rate for all ages be relied upon as a comparative index of the health or sanitary condition of any community?" The object of the paper was to demonstrate that the general death-rate of any one place, although in itself due to a combination of many causes, may be taken as a fairly trustworthy local index to health and sanitary condition, but that it is a most faulty index as regards the comparative health and sanitary condition of different localities. The latter fact he attributed mainly to the extreme variability in the proportions of persons living in different places under the principal age groups.

Mr. E. Stanford, of Charing Cross, has just issued three volumes of his series of Tourists' Guides. They are Guides to Suffolk, Wiltshire, and the Wye and its neighbourhood; the first by Dr. J. E. Taylor, the second by Mr. R. N. Worth, and the third by Mr. G. Phillips Bevan. Each of the volumes has been carefully compiled, and is worthy of the useful and well-known series to which it belongs.

An interesting collection of Indian antiquities is now being exhibited at the Albert Hall. It includes, among other objects, a large number of Palæolithic and Neolithic implements, remains from Indian grave-mounds of the prehistoric aborigines, copies of rude cave pictures and marks on rocks, and Buddhist sculptures and terra-cotta seals found among the ruins of Kusinagara. The objects exhibited form part of a collection made in India by Mr. A. C. Carlyle, late of the Archæological Survey of India.

The remains of a cemetery belonging to the age of the Gauls have recently been discovered in Paris, in the old Faubourg St. Germain, at the corner of Rocroi and Bellechasse Streets. Fifty-two tombs have been found, with skeletons, most of which are skeletons of women and children. Only twelve are skeletons of men. Many weapons and implements have also been unearthed: swords, lances, shields, and bronze and iron instruments of all descriptions.

The grasshopper plague is giving serious trouble in Algeria this year. The efforts made to destroy the eggs have proved useless. In one district 50,000 gallons have been collected and burned. This represents the destruction of 7,250,000,000 insects.

It is observed in the French army that diseases of the heart are very common. In a recent study of this subject, certain military doctors show that they arise from the fatiguing duties imposed on recruits, at an age when, generally, the development of the body is not in harmony with that of the heart, being either in advance of it or behind it. In the latter case, there is hypertrophy of growth; in the former, insufficiency (the more common occurrence). An instance is given in which a regiment in garrison in the West, in 1880, had on an average twelve to fifteen men per thousand invalided annually (the normal figure for the French army), of which number two or three had hypertrophy of the heart. A colonel came to the regiment who had very faulty notions as to the amount of drill and fatigue the men could stand. By September 1883, the number of heart-invalids had risen steadily to twenty-two out of forty-five (*i.e.* about one in two).

A brilliant discovery is announced in the current number of the *Berichte der Deut. Chem. Ges.* by Dr. Theodor Curtius, who has succeeded in preparing the long-sought-for hydride of nitrogen, $(NH_2)_2$, amidogen, diamide, or hydrazine, as it is variously termed. This remarkable body, which has hitherto baffled all attempts at isolation, is now shown to be a gas, perfectly stable up to a very high temperature, of a peculiar odour, differing from that of ammonia, exceedingly soluble in water, and of basic properties. In the course of his work upon the diazo-compounds of the fatty series, Dr. Curtius treated diazo acetic ether with hot, strong potash, and obtained the potassium salt of a new diazo-fatty acid, which on addition of mineral acids yielded yellow tabular crystals of the free diazo-acid. On digesting the yellow aqueous solution of this acid with very dilute sulphuric acid the colour disappeared without the usual evolution of nitrogen ; and on cooling a magnificently crystalline substance separated out, which was shown by analysis to be no other than the sulphate of amidogen, $(NH_2)_2 . H_2SO_4$. These crystals remained unchanged at 250°, but on strongly heating over a flame melted with explosive evolution of gas and deposition of sulphur. On warming this salt with potash solution the free diamide, $(NH_2)_2$, was expelled as a gas which changed red litmus into blue, and rendered itself evident by its irritating odour. The gas fumed in contact with hydrochloric acid forming the hydrochloride, and on leading it into sulphuric acid re-formed the sulphate. It possessed energetic reducing properties, reducing Fehling's and ammoniacal silver solutions in the cold, gave a dense red precipitate with neutral copper sulphate, and formed crystalline compounds with aromatic aldehydes and ketones. It is very seldom that chemistry is enriched by the discovery of a new gas, and the intrinsic value of the isolation of amidogen to both organic and inorganic chemistry renders the communication of Dr. Curtius one of exceptional and of far more than passing interest.

MEASUREMENTS have lately been made by Messrs. A. von Ettingshausen and W. Nernst, upon the Hall effect manifested in different metals. They have found that tellurium far surpasses bismuth in its power, hence they think that the Hall effect is connected with the thermo-electric properties of the metals. The effect is least in tin. Taking this as unity, the effects in other metals are relatively as follows: platinum, 6 ; copper, 13 ; gold, 28 ; silver, 21 ; palladium, 29 ; cobalt, 115 ; iron, 285 ; nickel, 605 ; carbon, 4400 ; antimony, 4800 ; bismuth, 252,500 : tellurium, 13,250,000. The sign of the effect is positive in the case of cobalt, iron, steel, antimony, and tellurium, also lead, zinc, and cadmium. It is negative in all the others.

THE mining engineer, M. Dahll, who has been examining the north of Norway on behalf of the Norwegian Government, states in his Report that all the rivers in the interior of Finnmarken, a district of fifty Norwegian square miles, carry gold. The metal is found in sand contained in little hollows, which by their shape prevent its being washed away by the water. The weight of the gold grains varies from 10 milligrammes to 1 gramme. Platinum is also found occasionally.

DURING the cutting of peat in a moss at Vevang, near the town of Christiansund, in the north-west of Norway, the workmen recently dug out a log of oak over 12 feet in length, and about 4 feet in diameter. It was found at a depth of 9 feet. The trunk and root of a great oak-tree were unearthed in the same moss some years ago, so we may conclude that there was once an oak forest in this spot. The remains of the oak were found below a layer in the bog in which remains of firs are often found.

IN the new number of the Proceedings of the Geologists' Association there is a paper by Dr. H. Hicks on the explorations which he, in conjunction with others, has carried on in the Ffynnon Beuno and Cae Gwyn Caverns in North Wales. He has no doubt whatever as to the accuracy of the conclusions presented by him in his previous papers on the subject. "I am," he says, "perfectly convinced by the evidence found during the exploration of these caverns that they must have been occupied by man and the animals before the climax of the Ice age ; also that the thick stalagmite was formed some time during that age ; that this was broken up by marine action during the submergence ; and that the caverns were afterwards completely covered over by materials deposited from floating ice. There seems, therefore, to be every reason to suppose that man and the so-called Pleistocene animals arrived in this country in advance of the glacial conditions, and that their migrations were mainly from northern and north-western directions."

THE first number of the *Technology Quarterly* has been sent to us. This new American periodical is published by a Board of Editors chosen from the senior and junior classes of the Massachusetts Institute of Technology, representing, as far as possible, all the departments of the Institute. A large amount of original work is done in the Institute every year by advanced students, and it is thought by the editors that the *Quarterly* will be an acceptable journal if it contains nothing more than the results of the original investigations made in the chemical, physical, mining, mechanical, and biological laboratories, and also in the departments of civil engineering and architecture. But it is expected that the *alumni* of the Institute will be glad of this medium for recording their investigations and the results of their practical work. Among the contents of the present number are articles on "The Control of Rivers and the Prevention of Floods," "The Efficiency of Small Electromotors," "The Use of the Aneroid Barometer in Western Massachusetts by the U.S. Geological Survey," and "The Constitution of Benzol."

THE additions to the Zoological Society's Gardens during the past week include two Macaque Monkeys (*Macacus cynomolgus*) from India, presented respectively by Mrs. Slatter and Mrs. Beeston ; a Lesser White-nosed Monkey (*Cercopithecus petaurista*) from West Africa, presented by Miss Kate Wood ; a Grey Ichneumon (*Herpestes griseus*) from India, presented by Miss Dudding ; a Common Squirrel (*Sciurus vulgaris*), British, presented by Mrs. Dick ; a Virginian Deer (*Cariacus virginianus*) from North America, presented by Mr. Tom Jay ; three Kestrels (*Tinnunculus alaudarius*), British, presented by Dr. J. W. Trentler ; two Blue Titmice (*Parus cæruleus*), British, presented by Mrs. Francis L. Barlow ; a Blue-eyed Cockatoo (*Cacatua ophthalmica*) from New Britain, presented by Mr. W. H. Fellows ; four Horned Vipers (*Vipera cornuta*), three Dwarf Chameleons (*Chamæleon pumilus*), a Many-spotted Snake (*Coronella multimaculata*), a Rufescent Snake (*Leptodira rufescens*) from South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S. ; a Crowned Horned Lizard (*Phrynosoma coronatum*) from California, presented by Mr. Duff Gordon ; a Pig-tailed Monkey (*Macacus nemestrinus*) from India, four Herons (*Ardea cinerea*), six Night Herons (*Nycticorax griseus*), European, deposited ; a West African Python (*Python sebæ*) from West Africa, purchased ; a Mesopotamian Fallow Deer (*Dama mesopotamica*), two Japanese Deer (*Cervus sika*), two Collared Fruit Bats (*Cynonycteris collaris*) born in the Gardens ; two Yellow-legged Herring Gulls (*Larus cachinnans*) bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE GREAT SOUTHERN COMET, 1887 *a*.—Mr. Chandler continuing his researches on the orbit of this comet (referred to in last week's NATURE), gives, in No. 157 of the *Astronomical Journal*, the following elements deduced from the Cape and Adelaide observations published in the *Monthly Notices* for March last :—

$$T = 1887 \text{ January } 11{\cdot}230 \text{ G.M.T.}$$

$$\left.\begin{array}{rcrr} \omega & = & \overset{\circ}{63} & 36{\cdot}0 \\ \Omega & = & 337 & 42{\cdot}8 \\ \iota & = & 137 & 0{\cdot}0 \end{array}\right\} \text{ True Equinox.}$$

$$\log q = 7{\cdot}73892$$